NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, MULCH TILL

(Acre)
CODE 329B

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting.

PURPOSES

This practice may be applied as part of a conservation system that meets the social and economic objectives of the producer and supports the following purposes, as applicable:

* Reduce sheet and rill erosion.

* Reduce wind erosion.

* Maintain or improve soil organic matter content and tilth.

* Conserve soil moisture.

* Manage snow to increase plant available moisture.

* Provide food and escape cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes tillage methods commonly referred to as rodweeding, chiseling or disking. It applies to stubble mulching on summer fallowed land, to tillage for annually planted crops, and to tillage for planting perennial crops.

This practice does not apply to fields using seasonal residue management since residue are not fully incorporated by mulch till for seedbed preparation.

CRITERIA

General Criteria Applicable To All Purposes Named Above

Loose residue to be retained on the field shall be uniformly distributed on the soil surface. Combines shall be equipped with spreaders capable of redistributing residue over at least 80 percent of the working width of the header.

Residue shall not be burned.

Tillage implements shall be equipped to operate through plant residue without clogging, and to maintain residue on or near the soil surface by undercutting or mixing.

Planters, drills, or air seeders shall be equipped to plant in residue distributed on the soil surface or mixed in the tillage layer.

The number, sequence, and timing of tillage and planting operations, and the selection of ground-engaging components, shall be managed to achieve the planned amount, distribution, and orientation of residue after planting or at other essential time periods. Acceptable alternative tillage sequences shall be initially determined by a residue budget using locally applicable data on residue production by crops and residue

reduction by tillage machines. Further adjustments shall be made as needed during the tillage sequence based on field measurements of remaining residue.

Additional Criteria To Reduce Sheet And Rill Erosion

The amount of residue needed to reduce erosion to the soil loss tolerance (T) or any other planned soil loss objective, shall be determined using current approved erosion prediction technology (RUSLE). Partial removal of residue by means such as baling or grazing, shall be limited to retain the amount needed.

Tillage operations shall be limited to methods that leave residue on the surface and maintain the planned cover conditions.

Calculations shall account for the effects of other practices or tillage operations in the conservation management system.

Additional Criteria To Reduce Wind Erosion

The amount and orientation of residue needed to reduce erosion within the soil loss tolerance (T) or other planned soil loss objective shall be determined using current approved wind erosion prediction technology. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed. Calculations shall account for the effects of other practices or tillage operations in the conservation management system.

Additional Criteria To Maintain Or Improve Soil Organic Matter Content

The amount of residue needed to achieve the desired soil condition, shall be determined using the current approved soil conditioning rating indices procedure. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed. Calculations shall account for the effects of other practices or tillage operations in the conservation management system.

Additional Criteria To Conserve Soil Moisture

A minimum quantity of 50 percent residue cover shall be maintained throughout the year. Residue shall be evenly distributed and maintained on the soil surface. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Additional Criteria To Manage Snow To Increase Plant Available Moisture

Stubble shall be left standing as high as possible by the harvesting operation, but not less than 6 inches in any case.

Stubble shall be maintained in a standing orientation over winter to trap and retain snow.

Fall tillage operations shall be limited to undercutting tools such as blades, sweeps, or deep tillage implements such as rippers or subsoilers, in order to maintain stubble in a standing condition through the months when snow occurs.

Additional Criteria To Provide Food And Escape Cover For Wildlife

The amount of residue and height of stubble needed to provide cover shall be determined using the approved NM Wildlife Habitat Evaluation Guides. Residue shall not be removed unless it is determined by the habitat evaluation that removal would not adversely affect habitat values. Stubble shall be maintained standing over winter. Tillage shall be delayed until spring, in order to maintain waste grain on the soil surface during winter.

CONSIDERATIONS

To plan crop residue management systems for erosion control or other conservation purposes requires a general working knowledge of the degree to which tillage and other field implements bury crop residue, and how much residue is likely to remain on the surface after a single pass of that implement. For guidance, refer to Table 3.

Excess removal of plant residue by such means as baling or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plants, air and human resources.

Residue management systems generally increase infiltration rates, reduce surface evaporation, reduce on-farm power and energy requirements, reduce compaction and improve water use efficiency.

Mulch till may be practiced continuously throughout the crop sequence, or may be managed as part of a residue management system which includes other tillage methods such as no till.

Production of adequate amounts of crop residue necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and row spacings.

Where improvement of soil tilth is a concern, use of undercutting tools will enhance accumulation of organic material in the surface layer.

The effectiveness of stubble to trap snow increases with stubble height. Variable height stubble patterns may be created to further increase snow storage.

The value of residue for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

Chopping or "busting" coarse or heavy amounts of residue into smaller pieces reduces problems with residue plugging during tillage and seeding operations.

Tillage operations leaving a combination of flat and upright residue anchored to the soil surface is usually more effective for reducing wind erosion than flat residue.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and O&M described in this standard. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

No operation and maintenance requirements, national in scope, have been identified for this practice.

1. Special considerations for Pest Management:

    a. Special precautions must be taken to ensure that perennial weeds such as bindweed, johnsongrass and blueweed are not allowed to build up.

    b. Appropriate actions must be taken as needed for insect control, particularly around field boundaries, fences or other infectious sites.

2. Special attention is needed to ensure that eroded areas are repaired in a timely manner.

3. Proper operation and maintenance of equipment is needed to enhance this practice.